# IMMUNOCYTOKINES FOR ANTI-MESOTHELIN CANCER IMMUNOTHERAPY

## SUMMARY

The National Cancer Institute seeks partners interested in licensing or collaborative research to co-develop immunocytokines as therapeutic agents against mesothelin.

## REFERENCE NUMBER

E-118-2013

## PRODUCT TYPE

- Therapeutics

## KEYWORDS

- mesothelioma
- immunocytokine
- Immunoconjugate
- antibody drug conjugate
- anti-mesothelin
- antibody

## COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

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## DESCRIPTION OF TECHNOLOGY

Mesothelin is a protein that is aberrantly expressed by several cancers, most notably malignant mesothelioma. Immunoconjugates, often using bacterial toxins, that target mesothelin are being evaluated in clinical trials. Unfortunately, the formation of neutralizing antibodies by patients results in reduced therapeutic effectiveness over multiple administrations. Secondarily, Interleukin-12 (IL12), a protein with potent anti-tumor, anti-angiogenic, and anti-metastatic properties, was initially considered an attractive candidate as a cancer therapeutic, however systemic administration of IL12 is toxic.

Researchers at the NCI's Laboratory of Molecular Biology have created an immunoconjugate using an anti-mesothelin antibody (SS1) as the targeting moiety and IL12 as the payload molecule. This allows the

localized concentration of IL12 at cancer cells, reducing the toxic effects seen with systemic IL12 administration. Furthermore, using IL12 instead of a bacterial toxin helps to reduce the formation of neutralizing antibodies. The IL12-SS1 immunoconjugate is able to inhibit the growth human malignant mesothelioma in mouse xenograft models, suggesting it has significant potential as a cancer therapeutic. The researchers wish to partner with companies to co-develop the immunoconjugate beyond the pre-clinical stage.

## POTENTIAL COMMERCIAL APPLICATIONS

- Selective killing of cells that express mesothelin, such as those seen with particular cancers
- Specific cancers include malignant mesothelioma, pancreatic cancer and ovarian cancer

## COMPETITIVE ADVANTAGES

- Targeted therapy decreases non-specific killing of healthy cells, resulting in fewer non-specific side-effects and healthier patients
- Use of human IL12 as the payload may reduce formation of neutralizing antibodie, increasing therapeutic effectiveness

## INVENTOR(S)

Mitchell Ho (NCI) and Ira Pastan (NCI)

## DEVELOPMENT STAGE

- Discovery (Lead Identification)

## PUBLICATIONS

Kim H, et al. Novel immunocytokine IL12-SS1(Fv) inhibits mesothelioma tumor growth in nude mice. PLoS One. 2013 Nov 15;8(11):e81919. [PMID 24260587]

## PATENT STATUS

- **U.S. Filed:** U.S. Provisional Applicatation 61/820,543 (Filed 05July2013)

## RELATED TECHNOLOGIES

- E-139-1999

## THERAPEUTIC AREA

- Cancer/Neoplasm